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Article

Civic Hackathons: New Terrain for Local Government-Citizen Interaction?

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Abstract
As more and more governments share open data, tech developers respond by creating apps using these data to generate content or provide services that citizens may find useful. More recently, there is an increase in popularity of the civic hackathon. These time-limited events gather tech enthusiasts, government workers and interested citizens, in a collaborative environment to apply government open data in developing software applications that address issues of shared civic importance. Building on the Johnson and Robinson (2014) framework for understanding the civic hackathon phenomenon, Canadian municipal staff with civic hackathon experience were interviewed about their motivations for and benefits derived from participation in these events. Two broad themes emerged from these interviews. First, through the development of prototypical apps using municipal open data and other data sets, civic hackathons help put open data into public use. Second, civic hackathons provide government staff with valuable feedback about municipal open data sets informing and evolving future open data releases. This paper concludes with reflections for urban planners about how civic hackathons might be used in their practice and with recommendations for municipal staff considering using civic hackathons to add value to municipal open data.

Keywords
civic hackathon; civic technology; geospatial web; open data; open government; volunteered geographic information; web 2.0

Issue
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1. Introduction

For some, the term "civic hackathon" might conjure concerns about computer savvy individuals with malicious intent trying to disrupt power supplies or play games with traffic signals. The reality is refreshingly different. In the new world of open government, civic hackers use their coding skills to work with municipal open data to program apps and find solutions that improve ordinary people's quality of life. From Mayor Bloomberg's 2011 "reinvent NYC" civic hackathon to the City of Paris' 2016 urban security focused event to Toronto, Canada's 2015 traffic jam event, local governments worldwide are using civic hackathons to deploy open data to fix their cities.

The ubiquity of the internet and internet-enabled mobile devices in our everyday lives serves as the foundation for this connection between civic hackathons and open government efforts to make governments more accessible, accountable and transparent (Brown, 2007; Chang & Kannan, 2008; Longo, 2013; Yildiz, 2007). At its heart, the open government movement seeks to redefine the relationship between governments and citizens by, among other things, making

information about government services, activities and spending more available and understandable. One way in which governments demonstrate their openness is through the release of government data through open data portals. Here, open data is generally understood to be data "that can be freely used, shared and built-on by anyone, anywhere, for any purpose" (Open Knowledge Foundation, 2013).

But making data "open" is only the beginning of making *governments* open. Governments can only be considered truly open when their citizens have access to the information they need to inform their understanding of government processes, policies and decisions (Open Government Partnership, 2011). Open data is part of the information citizens need but it is not, in and of itself, necessarily easy to understand, use, or work with. When citizens begin to work with data to answer questions, address concerns and to advocate for change that open data becomes part of a participatory open data process and it begins to actively serve the open government movement.

This paper broadly considers how municipal government staff, including urban planners, might begin to seize new opportunities that new forms of data, such as open data, present. For example, what new interactions and engagements with citizens can be facilitated through the use of data? More specifically, this paper focuses its attention on civic hackathons—time intensive, civic-focused topic events convened to put data sets, often municipal open data, into active use through the creation of mobile device applications with civic/community intentions. Building on the Johnson and Robinson (2014) framework for evaluating the impacts of civic hackathons, this paper asks the question: do civic hackathons provide a new forum for local government-citizen interaction? Drawing from interviews conducted with Canadian municipal staff who have direct experience convening civic hackathons, the research found civic hackathons connect government and the citizen in two broad ways. First, through the development of prototypical apps using municipal open data and other data sets, civic hackathons help put open data into public use. Second, at civic hackathons with government staff present, the hackathon participants act as sensors, by sharing and providing feedback on data sets to the government data custodians. This paper presents these findings and concludes with reflections on the importance for municipal staff in general, and urban planners specifically, to consider their role in the emergence of a participatory open data movement.

2. Literature Review

2.1. The Changing Nature of Open Data Provision: Moving from Data Provision to Participatory Open Data

The provision of open data, that is, data collected by government to support service provision and decision-making, is rapidly becoming commonplace in many municipal governments throughout North America and Europe (Höchtl, Davies, Janssen, & Schieferdecker, 2014). Open data, typically provided in a raw format, through a web interface, and with a permissive license encouraging use, can consist of infrastructure data, such as roads, buildings, land use, service provision (garbage collection schedules, recreation programs), and transparency or accountability data (council minutes, expenditures, voting records).

Though this raw open data may be accessed directly by a citizen end user, there is frequently an infomediary role played by private sector companies, NGOs, journalists, and even other government levels or jurisdictions (Janssen & Zuiderwijk, 2014). These entities take open data and use it to create products that may have wider impact. For example, a private sector mobile application developer may rely on access to municipal transit scheduling information, provided as open data, to feed a mobile transit app accessed by citizens. Another example is the use of water quality data to feed a community group portal on local water management and drinking water safety issues. These examples represent outcomes of open data provision by government, taking raw data, providing it to a select group of tech-savvy users, who take this data, combine it with other data sources, and make a product that has impact with a specific community of users. However, this one-way process of data provision by government and access by infomediaries and/or citizens, can also be a two-way form of input, contribution, clarification, or editing, for example with citizens being asked to provide requests and input to government via a 311 request application (Johnson & Sieber 2013; Offenhuber, 2015). This move represents a culture shift from government data as product to data as a starter for conversation between government and citizen (Sieber & Johnson, 2015). This shift is mirrored in the evolution of the open data portal from simply a library or repository of raw government datasets, towards a meeting point where citizens may also access information prepared by municipal staff through data analysis, and to provide comment or input through a web form or companion mobile application (Sieber & Johnson, 2015). For example, an open data portal may contain both the raw dataset and a map-based viewer through which citizens can filter, explore, download, and even comment or edit specific pieces of municipal data (Johnson, 2016a). In this way, a government open data portal aims to diversify its user base to include a range of users, all with an interest in accessing and exploiting the civic potential of government data. These could include technically-savvy developers who want access to raw data, community groups or not-for-profits that are looking to support their community-support mandates

with information about their specific populations, journalists looking to find facts to support their stories, and also average citizens looking for specific answers or information. This change from data provision to engagement through information sharing approach shows a maturation and evolution of the role of open data, opening the possibility of a more participatory conversation with citizens (Janssen, Charalabidis, & Zuiderwijk, 2012; Sieber & Johnson, 2015).

This evolution in open data provision provides an opening for the citizen contribution of information, and also shows government interest in supporting the use of open data, either through their own activities as data analyst and service provider, or through specifically encouraging and activating others to act as 'infomediaries' (Janssen & Zuiderwijk, 2014). In both cases, this more active role of government as open data users or champions echoes Janssen et al's (2012) comments that open data must be used to be of value. One specific way that government encourages the use of open data is through the hosting or sponsoring of hackathons, developer contests, or codefests—all events designed to bring together diverse teams of individuals to work with municipal open data, often on a targeted issue of civic interest, in pursuit of a variety of goals—networking, prize money, opportunity to vend a product to government, or simply out of fun and enjoyment (Johnson & Robinson, 2014).

2.2. What Is a Civic Hackathon?

Code for America, a leading organization in the civic technology sector, defines civic hacking as people working together quickly and creatively to make their cities better for everyone (Code for America, 2013). Code's focus on the "civic" element of a hacking is key here—that there is an assembly of people gathering to focus their efforts on improving their community sets civic hacking apart from app development with entrepreneurial goals.

Johnson and Robinson (2014) offered the following description of civic hackathon:

> "The civic hackathon is a time-limited (typically hours or days) event, launched at a specific venue, where enthusiasts, government workers, interested citizens, and members of the private sector meet in a collaborative environment to access government open data. The goal of a civic hackathon is to leverage government open data to develop software applications that address issues of shared civic importance. Civic hackathons are often coupled with prize money or other material rewards for participants, and typically involve the release or promotion of new or potentially highly-valued government data. Civic hackathons often present a specific problem or theme (such as transit, or engagement), to which the sponsoring government aims to direct participant efforts toward the development of an app serving some sort of public and/or market need." (Johnson & Robinson, 2014, pp. 350-251)

As civic hackathons have grown in popularity, the community of practice has further refined what distinguishes an entrepreneurial app contest from a civic hackathon (Baccarne et. al, 2015; Dawes, Vidiasova, & Parkhimovich, 2016). The entrepreneurially-focused app contest places greater emphasis on the end-product (the app), claims of innovation, and market potential of the app (Baccarne et. al, 2015). In contrast, at a civic hackathon, the convenor or host is typically a government department or public agency and the data used are often government open data, (Harisson, Pardo & Cook, 2012) with goals of the event reflecting a public or civic need. As the frequency civic hackathons being held increases, we are witnessing them as a new venue for government and the public to interact. In this regard many scholars and practitioners are asking: are civic hackathons a new form of civic engagement?

2.3. Are Civic Hackathons a Form of Civic Engagement?

Zuckerman's (2013) two axis framework (Figure 1) is commonly used in discussions about how to evaluate civic technology and its contribution to civic engagement writ large (Sifry, 2015). On the x-axis, civic engagement activities are considered for their meaning ranging from symbolic events to ones with measurable impacts. Johnson and Robinson (2014) flag the need to differentiate the impacts of hackathons given that some are high tech stunts with free pizza, beer and t-shirts while others claim to offer a deep dive into important civic issues using municipal open data.

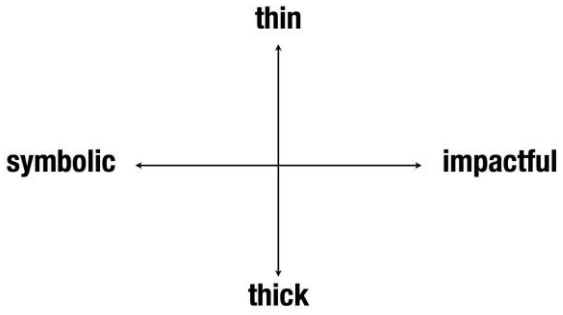

Figure 1. Zuckerman's 2-D matrix for thinking about civic engagement activities. Source: Zuckerman (2013).

On Zuckerman's y-axis we see a transition of civic engagement activities ranging from thin to thick. Building on this framework, Leighninger (2015) offers that "conventional" engagement includes the kinds of activities municipal governments commonly use to seek public input into their processes like public meetings and deputations to Council. Next he frames "thin" en-

gagement as activities in which individuals participate like voting and signing petitions. With new online capacity he adds tweeting, a Facebook "like", map contributions, and online feedback on government projects to the "thin" list. "Thick" engagement "enables large numbers of people, working in small groups, to learn, decide, and act together" (Leighninger, 2015, p. 190). Using this taxonomy, civic hackathons share the characteristics of "thick" engagement, yet despite this, many questions can be raised about the fit between civic hackathon goals and public need, the cross-section of society present at these events, and the overall impact of the civic hackathon, particularly as an event that is often run 'outside' of formal decision-making channels (Sieber, Robinson, Johnson, & Corbett, forthcoming).

This tension between "thick" and "thin" forms of engagement makes framing the civic hackathon wholly as a civic engagement exercise a challenge. As with Leighninger (2015), and Johnson, Corbett, Gore, Robinson, Allen, & Sieber, (2015), questions of value exist when assessing the outcomes of largely digital, selective engagement exercises. To develop a better understanding of where civic hackathons fit as some combination of outreach, service provision, extension of open data platforms, training, or even as civic engagement, we use interviews with municipal staff responsible for convening civic hackathons. Their perspective on the civic hackathon as potential engagement is critical for uncovering the motivations for launching a hackathon and also the perceived benefits derived from these activities. Despite rhetoric that civic hackathons have significant impacts, liberate data and offer a new form of civic engagement, it is time to move from speculation to gathering evidence.

3. Method

Given this project's focus on how governments are making use of open data, to assess the role of the civic hackathon as civic engagement, we identified municipal staff working in Canadian municipal governments as research participants. Key informant interviews are useful when trying to evaluate the outcomes of particular activities (USAID Center for Development Information and Evaluation, 1996). For this project, key informants were drawn from participants in a cross-Canada open data research project, and included representatives from many of the most developed municipal open data programs in Canada, as well as relative newcomers to open data provision. All key informants were considered to be experts in the subject of civic hackathons, having developed, planned, and/or hosted a municipally-sponsored civic hackathon. This particular focus on municipal staff was deliberate as this research sought to evaluate the potential use of civic hackathons from the perspective of municipal government staff. This internal focus on open data program evaluation is important, as building internal feedback mechanisms has been identified as a central way in which government can support the case for continued delivery of open data (Johnson, 2016b). Similarly, capturing staff perceptions of hackathons can provide not only a frame for evaluating the event itself, but reveal the underlying motivations and goals that drive government-citizen connections.

In total, six key informants were interviewed, representing the municipalities of Toronto, Ottawa, Edmonton and the Edmonton Public Library, and Kitchener. The small number of staff interviewed signals that civic hackathons are still not widely used by Canadian municipal government staff and thus the potential pool of interviewees was small.

Open-ended interviews were conducted, with the interviewer allowing respondents to elaborate and go into detail on a variety of aspects of hosting a civic hackathon, including motivations and outcomes, but also technical, procurement, and civic engagement issues. Interviews were recorded, transcribed, and then coded based on an open approach (Bain, 2003) which facilitated comparison between interviews on key themes. These interviews are used to define the key outcomes of civic hackathons from the municipal staff person's perspective.

4. Analyzing Civic Hackathons: Significant Outcomes for Data Providers

Through our research with Canadian municipal governments who have conducted civic hackathons, three main themes emerged in response to questions about motivations for holding and outcomes generated by civic hackathons. These three themes are; civic hackathons help to activate open data use, at the civic hackathon municipal staff participation is critical to help animate the municipal open data, and civic hackathons form a useful method of direct feedback from data users to government staff. We examine each of these themes in turn, providing evidence from interviews and comparison with existing literature.

4.1. Civic Hackathons Help to Activate Open Data Use

There is a common perception of the civic hackathon as a forum for the creation of mobile device applications with commercialization potential from government open data (Longo, 2013). In contrast, the local government staff interviewed for this research relayed that in the beginning, the "civic hackathon" was first conceived of as a way to help municipal governments to get their newly released open data into use by getting it out of the portal and into the community. The interviewee from Toronto shared "in early days people were asking questions like: where do I find the data?".

This comment shows that local government staff were using civic hackathons for two purposes—first to draw attention to the data sets themselves and second to help create awareness about where and how to find data. Kitchener staff had a similar experience, with early efforts focussed on getting data into the portal, raising public awareness about the data's existence, with hackathons being identified as a way to accomplish this goal. Similarly, in Ottawa, municipal staff showed leadership by connecting the need to release open data with additional efforts to get people to actually use it.

By hosting or supporting civic hackathons, municipal government staff are acknowledging that making data open, in and of itself, is only the first step in a broader program of supporting open data use. This demonstrates a desire on the part of government employees to move quickly beyond what Sieber and Johnson (2015) termed the 'data over the wall' model of open data provision, where data is 'dumped' in a portal, towards a more activist role of government as a supporter and even convenor of civic engagement activities related to open data use. We also see parallels with research on the deployment of technology tools, such as geospatial mapping, for civic engagement purposes. Sieber et al (forthcoming) signal in their work that when tech staff are asked about the potential for online tools to improve discussions between local governments and their citizens, they have an "if you build it they will come" mentality meaning that developers sometimes believe that great online, interactive tools, including open data portals, will draw users by their very presence. Yet research tells us otherwise, as many tools developed to support engagement become lightly or rarely used, and also inflict a range of structuring issues on the process of engagement (Johnson et al., 2015). It is clear from these experiences that the provision of open data and data management tools are only one step in broader engagement through data sharing, and simple provision does not relate to use or to any guaranteed desirable outcome.

4.2. Municipal Data Animation Efforts Benefit from Having Government Staff Present

The second common theme that emerged across the interviews is that staff realized, as their experience with civic hackathons deepened, that if municipal open data was going to be used in a civic hackathon, then it was important and advantageous for municipal staff to be involved with and present at the event(s) when the data was being used. In these events, staff responsible for a variety of roles within the local government were needed to provide support to hackathon participants. Data savvy staff are needed to "speak to the data" (City of Kitchener interviewee 1) regarding the technical characteristics, such as the structure, nature, limitations, and format of the data set and other data elements. The City of Toronto interviewee shared an experience from a civic hackathon at which participants were in need of a particular data set that wasn't available in the portal. The City of Toronto staff were able to quickly locate the data in spreadsheet format and share it with the participants. Without the staff present to respond quickly, the event would have suffered, with participants becoming stuck. In a different situation, participants encountered a technical problem with a data file. The City staff at the hackathon were able to call another staff person at home and solve the problem quickly, which is important in a time limited event like a civic hackathon. By having technical data staff present "it really enables the hack to go on" (City of Toronto interviewee), providing key assistance to hackathon participants and allowing data custodians within government to use their expertise to support the broader goals of open data, moving simple provision to actual use.

The interview respondents from Toronto, Edmonton and Kitchener consistently noted that civic hackathons helped municipal staff better understand the open data needs of their residents. Hackathons, according to the Toronto respondent are a space for staff to advocate for data use and to draw attention to the data but they have more potential to engage more municipal staff in addition to the municipal open data teams. Subject area staff (e.g. urban planners, municipal transportation engineers) are also needed at hackathons to help participants understand the context of the open data: "At the hackathon events you want the people that know the data but also it would be helpful to have the staff who work with data and practice....So I can...to some degree, help them navigate the website (open data portal). But if they're really looking for nitty gritty, then it's really helpful to have someone from the division there" (City of Toronto interviewee). In Edmonton, public library staff realized there was a resonance between the "open data movement" and the mission of their public library to "make information openly available to the public" (Edmonton interviewee 1). By having library staff attend, Edmonton forged connections between the open data team and the library staff. Despite the overall strength of this finding, as reported by our sample, it is important to remember that this research did not query the perspectives of hackathon *participants* about the presence of municipal staff. This issue will be addressed in the conclusion in a framing of future research needs.

4.3. Civic Hackathons Provide Important Feedback to Local Governments about their Open Data

Interviewees relayed that as their experiences with civic hackathons deepened their understanding of how to work with and improve their current provision of municipal open data expanded. For Edmonton, Toronto

and Ottawa, the first hackathons with municipal staff in attendance were different in terms of expectations and structure than the ones that followed. As the Toronto interviewee shared "in the early days we didn't really have much data at all. So we weren't really able to help them [hackathon participants] really do anything". While in the case of early events, local governments may have imagined civic hackathons as a way of publicizing their open data portals, helping the public learn more about open data and its potential, by hosting or participating in civic hackathons, municipal staff are engaged in a more reciprocal working relationship with data users. According to the City of Toronto interviewee: "all of that kind of learning…I don't believe you get it unless you engage and participate". Now that more municipal open data is available and more feedback from data users is being received through hackathon events, municipal staff are learning too about how their open data might better achieve its civic potential.

Through participating in civic hackathon events, open data staff reported receiving valuable feedback about the structure and accessibility of their open data sets. In some cases (e.g. Toronto), at a civic hackathon, participant questions signalled to staff that some existing data sets were hard to find. During one event, participants wanted access to Council minutes and agendas. In Toronto these data are available through the City of Toronto Meeting Management Information System (City of Toronto, n.d.) but staff learned, first hand, that the public was not intuitively able to find this information set and the municipal staff present were able to help connect the need with the information quickly. In another Toronto civic hackathon a participant, who was a coder with extensive technical expertise, questioned open data staff on how and why particular data files were structured and bundled a particular way. His questions led staff to make changes that resulted in open data files that were faster to download and easier to access on mobile devices. These resident-staff interactions also help staff quickly identify conflicts between data sets. The staff from Kitchener also specifically discussed how beneficial this kind of feedback on data structure and format was, allowing them to make changes and to learn for future data releases. Here having government staff present at civic hackathons facilitated reiterative learning that informed the early days of open data releases.

When City staff are able to participate directly in civic hackathons they also learn more about what kinds of data users want and need. Given that a 'large' open data catalog may contain one hundred datasets, there is an immense amount of data collected by government that is not provided via an open data portal. Municipal staff reported feeling the pressure of wanting to get more data out but they were clear that their hope is to get the data out that people actually needed and wanted and they "don't want a fire hose where they just put it (data) all up there". But through participating in civic hackathons, the municipal staff interviewed here reported gaining valuable feedback about which data sets are desired yet not yet shared on municipal open data portals. This allows data users to request priority data, giving municipal staff a specific reason to approach data custodians internal to government, and to work with those departments to make a given data set open. The City of Toronto staff person specifically noted "But we like evaluations. We like to see evidence of people's reactions". Similarly, the Kitchener staff also reported benefits from the in-person discussions about data: "We talked to different groups in terms of what sort of things they would be interested in. And it's like "what do you want?", "What do you have?"" Well, what do you want? We got a lot of stuff." "Well, what do you have?" (...) But then there's the odd ball things that you don't even think about, and until you put it up there, and people start asking questions and giving you some feedback on what you've got, what's missing. You know, geez, if it only had this then we could, you know—I got an idea but I need this other piece. It allows us to tweak what (data) we're putting out." And the Edmonton staff members also reflected on receiving the same benefits: "we wanted people to give us a sense of how we could move forward engaging the open data movement in the community of people and the city who are invested in it. And we got a lot of feedback that helped give us that kind of direction". Here the face-to-face contact provides valuable feedback for City staff about how to prioritize future open data releases.

This process of working directly with the public at civic hackathons, outside of formal public meetings, is a different point of connection for municipal government staff. These changes require shifting mindsets about what it means to share information rather than keeping it from public access. In the words of one interviewee: "Now I'm starting to get into it (open data) and now it's like, well, let's see what we can put out there. That's not easy to do when you've had twenty years behind you of hoarding data". Early participation in civic hackathons has lasting impacts on how government staff conceived of their working relationships with the public:

> "We're directed not to create, not get into the apps contest or whatever, but be involved as part of our crowd sourcing concept, which was accepted. In other words, as we're doing this, let's go out and ask the community what they need and not sort of define it ourselves. So that's where actually going and participating in the *hacks*, sort of, *became our methodology*. And we learned quite quickly that you know what, we're not—we wouldn't be really good at creating these kinds of events because the sort of ethos, the culture, if you like, is very differ-

> ent to, to what we are more accustomed to. So if we were going to do a hack, likely, back then especially, right, likely we would have said, oh, it's got to be on a Monday between 8:30 and 4:30. So we observed that. And said, well, you know, this is amazing. And how are we contributing? How do they seem to want us to contribute? It looked like more or less as the people presenting some of the data, that that's what they were asking us, where do I find this?" (City of Toronto interviewee)

And civic hackathons have put different staff into direct contact with the public. In the past, GIS and data staff have been behind the scenes "serving the needs of the Corporation" yet now, with civic hackathons, these staff are in rooms with members of the public. This change is welcome by staff and it is significant.

Another reciprocal benefit that staff report from their engagement in civic hackathons is that staff perceive them as events that help residents learn about their community and how their local government functions. One interviewee shared:

> "You know, it's just a very different means of operation than traditionally what you get out of government. And I've seen evidence of it being successful with the community. And I found the community to become more tolerant of our delays for whatever reasons there are, they respect us/ because we're there. If we were less inclined to participate and be visible then I think you would see more blow back and who knows what kind of even editorial you might get in the blogs and the tweets/ and whatever media coverage there is." (City of Toronto interviewee)

The same participant also noted:

> "And I'd argue too that it's a way of teachable moments. It's all part of civic engagement. It's getting people to understand how the government works and why it works. And does it work well for them? And I mean, think of it, it's a two way street. We could come back easily and talk about issues".

5. Conclusions: Are Civic Hackathons a Gateway to Broader Civic Engagement?

Ultimately, staff report that they perceive civic hackathons to be a step in the direction toward new resident-government relationships. Civic hackathons have, in one way, helped government staff see how keen residents are to engage with open data beyond the hack events themselves: "There's been a strong appetite for people to just give them a time and a place and a reason to come together, to see what each other's working on or interested or learn about new tools or new data sets or meet people at the city and ask them questions about the data. So it's more about setting them up for work that happens outside of those events" (interviewee). And in Edmonton, the library staff interviewed reported that from their experience, the civic hackathon "idea was civic engagement, just putting people face to face and giving them the opportunity to work together".

As open data communities mature we are seeing the emergence of additional types of events at which open data are used and explored. In Ottawa, community members started an open data book club where people meet monthly to discuss a data set—here the focus is on the data and its use rather than on app development. In Toronto there is an open data book club and a weekly civic tech hack night which combines discussions about data sets with ongoing work on app development. This range of activities at which municipal open data is considered and sometimes used in app development demonstrates that residents have an interest in open data and its application beyond tool development. And as these kinds of beyond-civic-hackathon activities emerge, questions will arise for local government staff. The City of Kitchener staff interviewed shared "the people who did get engaged were looking toward the next thing. So, you know, again, how far do we (the City) take it with that? And at what point does our role stop in that and does the community take it on?".

A municipal government bringing in outside actors, in this case citizen hackers, to work on apps that have civic benefit could be argued to be form of outsourcing consistent with trends toward neoliberalization. Johnson and Robinson (2014) asked whether hackathons were a form of backdoor procurement? In some ways, a civic hackathon represents one step towards the implementation of the neoliberal rhetoric of open government—with its attendant challenges generated by shift of power from centralized to decentralized (Bates, 2014). If the civic hackathon movement continues to be popular, these concerns are important to track and evaluate. However at this particular moment, civic hackathons appear to be more valuable to local governments as a tool for engagement than as a technique for getting free or subsidized labour in the form of app building. Furthermore, increasingly, civic hackathons are being grouped with other activities like Open Data Book Clubs and data sprints at which the focus of the meetings is more about the discussion of the data and its potential than on the production of the app itself.

These interviews conducted for this research begin to shed light on the impacts of a relatively new phenomenon for local governments: the civic hackathon. These findings confirm that civic hackathons are different from entrepreneurial app contests in that their "value" and impact focuses more on sharing, animating and generating feedback on civic open data sets than it

does on producing a ready-to-use mobile device app. These findings signal the importance of municipal open data needing stewardship in the form of municipal staff familiar with the data, their format and structure and also municipal staff with knowledge and experience in the areas of application related to the data. Through participation in civic hackathon events, municipal staff reported gaining receiving valuable feedback about what kinds of data residents want, how well the data sets are structured, and how these data sets might inform actions taken by residents. This feedback opportunity reinforces the importance of municipal staff needing to participate at the events, acting as infomediaries that can facilitate the creation of information from the raw open data (Janssen & Zuiderwijk, 2014). These findings also help position civic hackathons as an event that contributes to broader participatory open data efforts and that also may serve as an entry point for residents to participate in other civic engagement efforts.

When this research began, the distinction between app contests and civic hackathons was less clear than it is now, with questions arising about whether the hackathon phenomenon was a trend that would taper off. In 2016, governments worldwide continue to sponsor hackathons with a variety of goals including possible app development, and these findings signal that organizers might think beyond prizes, having robust participation numbers and publicizing outcomes to what the role of civic hackathons is in connecting the public with civic open data. This research on civic hackathons helps to demonstrate that there is civic and local government value in having staff attend these events, though one challenge that many local governments face with civic hackathons is that they often take place outside of regular working hours for municipal staff (e.g. on weekends and into the evening) but given the learning and knowledge exchange between municipal staff and participants, there is an institutional argument to be made for having staff present. Civic hackathon organizers should consider, from the outset, what feedback mechanisms they can create to allow the useful feedback provided at these events to shape and influence municipal open data practice moving forward—who needs to be present and what kinds of note taking, and post-event evaluations might be developed to gather this feedback in a way that is useful and durable? And, given that civic hackathons appear to lead to other open data events and engagement and civic engagement more broadly, how can local governments take full advantage of the civic engagement potential of these events to harness that energy and put it to future use?

Urban planners, as municipal staff, may also take particular note of the civic engagement potential of civic hackathons. It is a "normal" part of their work for municipal planners to be directly engaged with the public. As professionals who direct and implement local land development processes, urban planners are commonly legislatively required to hold mandatory public meetings. Yet civic hackathons are a markedly different event—there are no formal, local government decisions taken, there are no proponents of a development process. Civic hackathons are more informal and collaborative than typical land use planning public meetings. In civic hackathons there are myriad forms of expertise with people working voluntarily and collaboratively. Given the popularity of civic hackathons and the findings presented here that signal their potential to add a new dimension to the relationship between residents and their local governments, municipal planners should become familiar with the civic hackathon event and begin to consider what points of meaningful contact there might be with urban planning practice.

In developing this project, the research team wondered whether civic hackathons would be a flash-in-the-pan trendy event whose time would have come and gone before the findings were shared. Instead the interviews conducted here reveal that hackathons continue, at least in the short to medium term, to provide a valuable forum for municipal staff and a broad diversity of data users including citizens, private sector, non profits, and journalists, to explore open data. Rather than reliably producing civic-minded apps for mobile devices, civic hackathons in their current form are useful events in a participatory open data ecosystem and they appear to add value to municipal open data through taking this data and putting it into action within a specific community of data users, closely working with government representatives. In this way, the process of a civic hackathon becomes much more important as outcome compared to a specific app that could be developed. As a re-framing of government-citizen relationships with open data access and use at the center, a civic hackathon exists as a manifestation of the potential for engagement.

Despite this potential, many critical questions for future research emerge, most notably asking what are the specific outcomes for civic hackathon participants? What kinds of people participate or critically, do not participate (e.g. age? gender? background—technology, urbanist?)? What motivates the participants to come (e.g. fun? wanting to make a difference? entrepreneurial aspirations? new form of volunteerism?)? What do participants think about having local government staff present and does this presence enhance or hinder interest in participating? Do the participants share the government staff's enthusiasm for the new space that hackathons create for citizen-government staff interaction? And how do residents feel when their politicians participate? One could imagine tension emerging if a hackathon investigated topics such as council expenditures or other potentially sensitive transparency data with representatives of the government in question. As

open data portals grow, the feedback loop between hackathons and municipal open data efforts should be further explored. How does government go about incorporating and acting on diverse feedback, and are there specific obstacles that may be blocking the further development of both open data and the civic hackathon? And most critically, what is the long-term future of the civic hackathon event? Is there a limited appetite for this type of activity, and without evidence of real engagement or changes driven through participation, is the likelihood of further investment from governments destined to falter? Or, is as hinted by the key informant interviews presented here, could a civic hackathon a potential new conduit through which government and citizen can connect? Finally, is the hackathon an entry point for disruptive action, such as a launch pad for entrepreneurial activity that may appropriate government roles to the private sector?

The interviews conducted from this modest sample of Canadian local government staff form findings that contribute to the nascent body of literature focused on the civic impacts of hackathon events. Research that builds up and broadens the focus on civic hackathons is encouraged. A web search of "city hackathons" shows upcoming events in cities like Amsterdam, San Diego, and Dublin among many which signals the civic hackathon, as an open data engagement event continues to be popular. While there is more research attention devoted to the entrepreneurial app contests and their impacts, this research shows there are marked differences in intent, structure, expectations and outcomes between app contests and civic hackathons. Furthermore, as open government and open data movements continue to build momentum, additional research is needed with a civic or public focus because, as this project demonstrates, the impacts and outcomes of civic hackathons do appear to offer a new terrain for local government-citizen interaction.

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Conflict of Interests

The authors declare no conflict of interests.

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